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EDITORIAL

It is with a keen sense of responsibility that the American Geographical Society takes over so well-known and substantial a periodical as the *Journal of Geography*. Teachers of all grades and in great numbers have looked to it for years as a source of geographical knowledge and inspiration. Its list of contributors includes the names of many distinguished men both here and abroad. It is the only publication in America conducted exclusively for teachers of geography.

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are leaders in education? You do, unless you are devoted exclusively to an easy time; unless you are submerged by the routine instead of being sustained by the ideals of life; unless you are a slave to the text book instead of being one of the educational pioneers. Every one must choose whether to be a soldier or to stand on the curbstone and watch the flag and the soldiers go by. Are you in an eddy or in the full sweep of the main current of life? Are you mentally dead or alive?

Every principal and superintendent is looking for the real stuff among his staff. He can tell it a mile away. You don't need to write him about it if you are one hundred per cent fit. Get fit! The *Journal* is not prescribed as a remedy for all your ills. It will neither cure the pedagogically sick nor reform the constitutionally lazy person. But it can give one kind of material which is indispensable if you mean to be fit and alert and progressive and effective. If you are awake you will want the ideas of wide-awake people. An optimist doesn't get his inspiration in a morgue. Use the text book but don't abuse the class with it. The *Journal of Geography* will give you new ideas, new facts, new springs of interest. It will do this because it has had pledged to it the help of a number of great men who believe in the idea it carries and because the leading educators and geographers will stand back of it. If the idea appeals to you, use it and work for it, write for it, speak for it, and it will not be long before we include in the National Council of Geography Teachers, for which the *Journal* speaks, all of the ten thousand geography teachers in America.

THE TURK, CASUAL OF GEOGRAPHY

By LEON DOMINIAN

From the mountain border of China to the valley of the Danube the stretch is long but always open: mile upon mile, four thousand and more, of clear footing, over which the nomad may pursue his course without interruption. A large part of this even surface is the Turan of Asiatic writers, a land beset by wind, drought and sandstorms—withal the cradle of Turkish power. Upon that spacious stretch of our world imagination is free to run riot with the host of tumultuous recollections bequeathed by centuries. There was a time when the silk of China reached the markets of Imperial Rome or the kingdoms of Franks and Gauls by way of this land avenue. The westerly advance of the Turks proceeded along the same belt in a migratory movement which, at the lowest computation, is five thousand years old. And when the crest of this mighty human wave swept over eastern Europe, in the fifteenth century, it meant that the western marches of China had been moved to blue water in the island-cluttered Aegean. How these Turks came, hacking and hewing their way to empire with the curved blades of their scimitars, whence and why, I shall strive to tell.

Turan, the Home of the Turk

STEPPE AND DESERT

The more southerly portion of the great uninterrupted plain extending across Europe and Asia consists of alternate patches of grassland and desert sand. In either the eye scans the widest of prospects. Grass, grass everywhere, or else sand, nothing but sand, to an ever-receding horizon, underneath a lonely sky. To look for novelty in the expanse of those continuous plains is useless. Sometimes in the sandy stretches a few green spots relieve the monotony and keep the nomad footbound for a brief spell of days; but, apart from this solace, the great plain always flees before one's vision. The stolid and fatalistic soul of the Turk was bred in the midst of that everlasting sameness.

The pasture lands in spring wear a mantle of luxuriant grass. In the more southerly sections the pleasant green is gradually withered under summer heat to the dull grayish yellow of the fall. Farther north a more considerable summer rain preserves the pastures green till winter. In winter drifting snow contributes another change in the seasonal color cycle; for this wild steppe lies open to the northern winds that sweep with never an obstacle along their gusty path. Here climate, as well as soil, has imparted a ceaseless mobility to man. It is nothing for him to wander a thousand miles between summer and winter pasture and a thousand miles back, and some times he wanders permanently farther afield.

From the grassland to the desert the transition is marked by wilted herbage and the fading leaves of stunted shrubs. Then follow acres of life-choking sands. To one acquainted with Turkish the names on the map of Asia betray reality in vivid language: "Kizil Kum," red sands; "Ak Kum," white sands; "Kara Kum," black sands, but always sand, the crumbling wreckage of nature denying a foothold to man or beast. Turning from western Asia towards the east there is Gobi, a form corrupted from the old Turkish "Kobi", which means emptiness. Upon these wastes, be it east or west, the wayfarer travels over the changing surface of sand mounds spread in surges of gritty, mobile particles responding ceaselessly to the call of the winds. The impression of abandonment, of impending mishap, is always present.

THE CLIMATE OF CENTRAL ASIA

North of the deserts and the grasslands lie Siberia's gloomy forests; and beyond, more wastes—the frozen tundra belt—lands inclement and repellent. To the south the majestic sweep of Asia's giant mountains is an equally forbidding barrier. Cut off from north and south, the Turk was fated to move perpetually in the direction of longitude.

In the zone of his movement the climate is one of uncomfortable extremes. Excessive heat of day changes to pinching cold at night. Icy cold winters alternate with hot summers. Ever open to northern winds the region is subject to marked changes of temperature at all seasons as they blow or subside. Restlessness and

nervous agitation in the Turkish disposition betray the ugly impress of this climate. Furthermore the cold season is abnormally long in Turan and Mongolia. Dreary months of howling winds

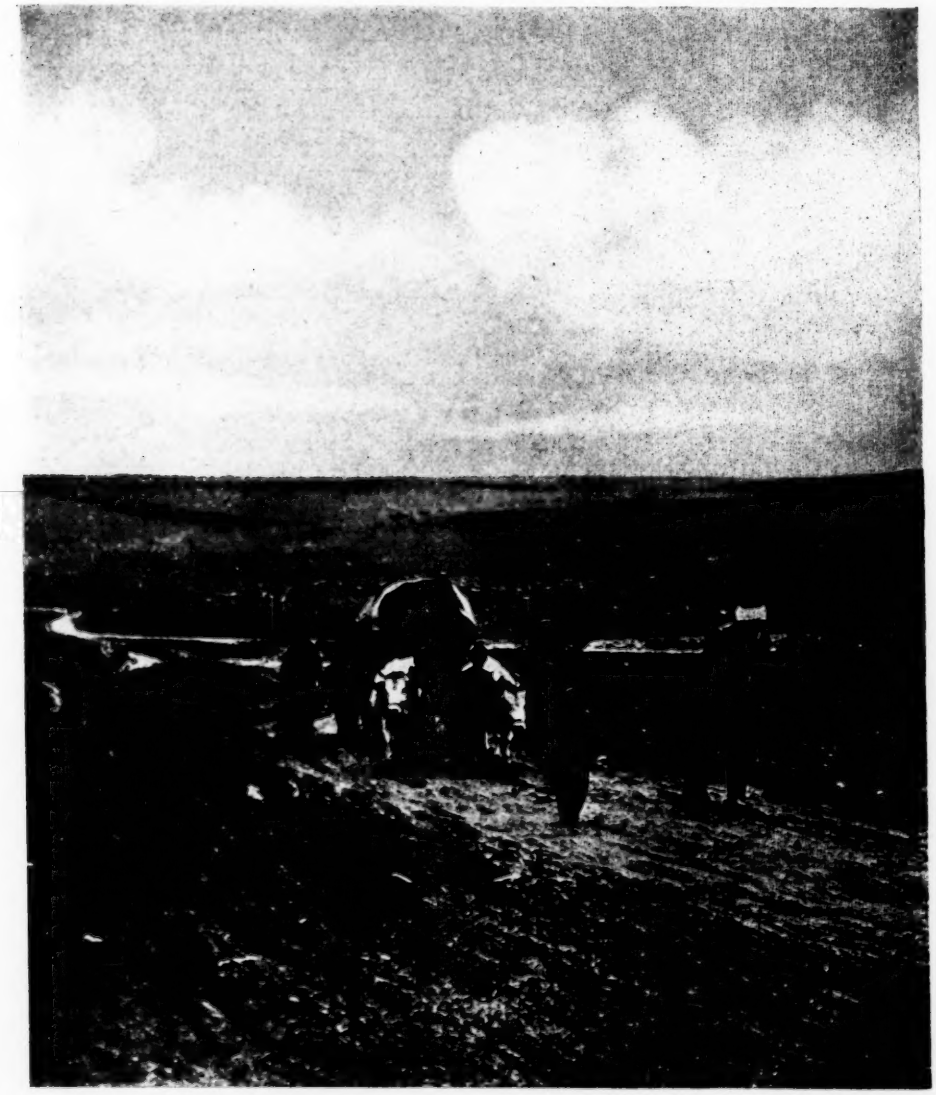


FIG. 1—Back to Asia. Anticipating the results of the Balkan War of 1912 many Turkish families fled from the European soil held by their forefathers through many centuries. (Photograph by Frederick Moore, reproduced by permission from *Asia*, Journal of the American Asiatic Association.)

laden with rain and snow have cast their spell over the Turkish race in the long period of its development. From the Arctic come gusts that sweep unchecked over the plains to the mountain

walls on the south. At times a streak of this windy violence will filter through the gaps in the ranges and desolate the plateau homes or carry the shiver of its glacial touch to the broad valleys of southern Asia.

At the edge of the plateau in Ferghana the natives, imaginative as are all their congeners of Iran, know this reminder of the Arctic by the name of "Ho Dervish" wind. Whenever it blows the tale is told of how four of these traveling monks were once caught in the fury of a straying gust and how, losing sight of one another, they kept on calling "Ho, Dervish!", "Ho, Dervish!" until they perished, overmastered by the icy blast. Since then, so the fanciful Sart will inform the traveler, the chase has been maintained by the ghosts of the unfortunate pilgrims, and the weird call tingles today in native ears as they listen to the northern gales.

Turan versus Iran: against Agriculturist

Such is Turan, the ancient home of the Turks. A land of solitary grandeur and of scant companionship. To the Persians it was the lean earth of barbarous darkness in contrast with their own Iran, the land of light. The conflict between the two regions is an ever-present theme of Persian poetry. Firdausi has immortalized it, representing in legendary form the struggle between the Turks, Tatars, and Mongols of the open steppe lands and the sedentary populations of the valleys and plateaus of Persia. No records afford a better insight into the history of Turkish southwesterly migrations than Persian literature. The steppe men of Turan were pastoral nomads to whom comfort had been measured in scanty dole. In contrast the settlers of Iran were engaged in farming, industry, arts, and sciences. They counted poets and philosophers in their midst.

The Nomad Life

How can the native of a steppe land be weaned from his roving propensity? How can the concept of frontier enter into his mind when infinity in all the majesty of its endlessness stares him in the face on all sides? The Turk became a conquering wanderer because his life, material and spiritual, was conditioned by the wild tract of his surroundings. Nature's work in breeding the nomad was thorough, for she also gave him the horse. By this crowning

gift the Turk came fully into his own. On the bare back of his mount he could feel that he had annihilated space.

The whole social order of the nomad body was permeated by the spirit of its steppe environment. Personal wealth was computed in terms of hoofs. Horses, by right, reverted to the eldest born male, sheep to the youngest. So tradition prescribed. The guardian of the hearth, that is to say of the tent, was always the last born son or a weakling, for elder brothers were warriors who often went forth never to return. The steppe, in which each free lance carved out its own domain of pasture, was theirs: a sword was the heritage most ardently prized. Armed with this symbolic weapon the Turk became his khan's trusted follower. To rush undaunted on the foe, to delight in the slaughter of enemies, and to meet death in the clash of arms was henceforth his martial and only creed. All his duties have been summed up in a single line of his only national poem, the Kudatku Bilik:

Sekirtur, ya eulturur, ya oorooshi eulur
He thrusts, he kills, or, fighting, dies

When the steppe was not a battlefield there was some charm in the primitive simplicity of the life of its occupants. The tented towns of nomad communities spotted the landscape in continually shifting blots. The winding streams, sickly though they might be, were favored spots where patriarchal tents were pitched; but these shelters were mere bubbles of homes alternately created and released by the nomadizing force of the waste surface. Beneath the smoke-tainted roofs culture never transcended the rug and curdled milk stage. Symbolizing that culture would come from the outside the neighing of horses grazing at ease intermingled with the bleating of sheep. To the aged and the women was entrusted the task of maintaining the flimsy fabric of desert society: the men were away battling.

The History of the Turks

For faithful accounts of the early Turks we must turn to the scant translations of the historical hoard accumulated by the patient labor of Chinese annalists. These records range back to 1400 B. C., some six centuries before Homer's immortal epic. The early Greeks and Romans knew little of the Turks; but in the Far

East Turkish tribes proved themselves so troublesome to the Chinese that the latter could not avoid bestowing considerable attention on their doings.

Shorn of the racial traits acquired by marriage with women of conquered populations, the Turk is none other than the old-time barbarian dweller of China's western frontier. There his reputation as a trouble-breeder fully equaled the obnoxious name he made

FIG. 2—A Kirghiz with his flocks. Their number determines his wealth and rank. (Photograph by E. Nelson Fell. Reproduced by permission from *Asia*, May, 1918.)

for himself at a later date in Europe. China's Great Wall was raised in the path of his depredations three hundred years before Christ. The Turk was then called by another name, but his identity is the same.

ETHNIC RELATIONS ON THE ASIATIC STEPPE

The Asiatic steppe country is inhabited by a single people. It is the connecting land between the slit-eyed population of the Orient and the men of our western races. It is also the home of the ideal snub nose. This peculiarity impressed early Western travelers, who came back from the East with tales of having seen a race of noseless men whose faces had two holes instead of nostrils. Toward the east the native tribes pass into pure Mongols and are known as such. In the middle parts, the tribes answer collectively to the appellation of Tatar. As they reach the west these same Tatars become Turks. The three names represent

changes of longitude; the difference they express is primarily one of place geography. A well-marked distinction is found only between inhabitants of the extreme ends of this great open land, that is only between the Chinese and the European, between the oblique eye and the round. In the Hiungnu of the Chinese, in the Turanian of the Persians, and the Scythian of the Greeks and Romans we recognize early names which correspond to the three-

FIG. 3—In the mountain border of the Turkestan steppe. Kirghiz on their various mounts: the horse is the favorite mount: the ox and camel are more particularly used as baggage animals. (Photograph by Ellsworth Huntington, reproduced by permission from *Asia*, May, 1918.)

fold regional divisions of the land inhabited by Turkish peoples: Hiungnus or Mongols, Turanians or Tatars (with a predominance of Mongolian traits), Scythians or Turks (with European features predominating). A change of name occurs after the fifth century, when Byzantine writers drop the name of Scythian and replace it with that of Hun. The change is significant for it intimates the arrival of the name Hiungnu on the eastern confines of the Byzantine Empire after centuries of westward travel.

EASTWARD MIGRATIONS

The continuity and sameness of the history of the Turks from the earliest times are its most striking points. It is the tale of a warrior race which, rather than remain prisoner in a stern and wild region, elected to wander beyond its confines. At first these warriors directed their blows eastward against China, but their

success in this direction was only partial, and with the stiffening of Chinese resistance they were compelled to seek the sandy roads that were to lead them westward against Europe. The turning point occurs somewhere between the second and third centuries of our era. After that time their eastern wars became desultory border struggles. Occasionally they managed to push annoying wedges into northern China. They even succeeded in placing dynasties of their race on the Chinese throne; but from the western battlefields calls for warriors became pressing and continuous. For China the Turks were no longer a danger; and yet, even to this day, strange as it may seem, they remain a vexation. The raiding brigands of northern Manchuria, who are now locally known as Hunghutzes and whose lawlessness affords many a paragraph to Chinese contemporary news sheets, are descendants of the Turks and are merely maintaining ancestral traditions whenever they clash with Chinese authorities.

Migrations Westward

With the early centuries of the Christian era Turkish peoples began a great series of westward migrations, pouring out from Inner Asia through the Dzungarian Gate onto the western steppes and deserts.

To the civilization of the West the Turk of this period is the barbarian, despised but not feared. The casual notices of Byzantine chroniclers are couched in tones of unfeigned contempt. Until the eighth century the turbulent tribes of Turan acknowledged no common leader. They lived and moved fighting incessantly among themselves. Then out of feuds and strife came unity. Hek Khan, a chieftain of the most bellicose clan, finally succeeded in uniting eastern and western Turks in a single nation with its capital at Kashgar. Furthermore about this time the Turkish human tool of destruction created by a semi-arid country was perfected by Mohammedanism.

From the ninth to the twelfth century the inflow of the Turks from the east never slackened. A fondness for grabbing land as well as Christian women appears to be the chief characteristic of the Turks of this period. It soon became one of the duties of far-seeing Byzantine statesmen to keep on hand a well-plenished stock

of beauties, often drawn from the best families of the empire, for the purpose of conciliating Turkish chieftains. Notable alliances of Greek princesses and Tatar sultans and emirs, recorded by the Byzantine chroniclers, increase in number with the decline of the Eastern Empire.

To the Khalifs, ever anxious to increase their domain at the expense of the Byzantine Empire, the intrepid nomads of the steppes proved valuable auxiliaries while at the same time they must needs be diverted from the lands of Arabic civilization. Turkish chieftains received assurance that all the land they could conquer by fighting beyond the western frontier of the Khalifate would be theirs. Thus were the Turkish emirates and fiefs founded in Anatolia. As long as the incentive existed the Tatars made good, and the scimitar eventually landed them athwart the Bosporus and in possession of the castles of the imperial city that guarded the famous strait.

THE TURK IN OTHER ENVIRONMENTS

So far the Turk had moved and acted within the field of his primitive and harsh environment. From now on, however, he forsook the old haunts of his race to force himself upon the table-lands of western Asia, where Persian pomp and Byzantine splendor filled his mind with visions of loot. Trained as he was to conquer the adverse forces of nature, the project offered little difficulty. He learned to recognize the slender ribbon of defiles carelessly hanging down slopes and setting their abruptness at naught. The mountain pass favored him, and the scattered bands that lacked cohesion on the broad grasslands or the sandy deserts became the close battalions that poured confusion among Persians and Byzantines. Two distinct regions, both elevated plateaus, both seats of empire, lay in his path. Persia, the political unit founded on the table-land which goes by the name of Iran, first gave way before the onslaught of the Turanians. The Greeks controlling the table-land of Anatolia were afterwards to fall.

In Persia, the desert-bred Turk found gardens, groves, and vineyards. Having tasted the delights of Oriental Capuas he forgot the frugal life he had led in his native land and gave himself over to self-indulgence. Beyond Persia lay the Byzantine domin-

ions, replete with pleasant gifts of land and sea. The Turk cast a longing eye towards this western territory. Visions of its conquest henceforth colored the dreams of his leaders. Already the softening influence of settled life at Teheran, Shiraz, or Isfahan had been felt among them: with the conquest of Byzantine lands Turkish life found itself finally transferred from the camp to the walled enclosure.

Before changing completely from nomadic to sedentary life, the Turk had a final spell of wandering. In Asia Minor he beheld familiar environment. The interior table-land is drearily devoid of vegetation. Its climate, sorely deficient in moisture, would be naturally shunned by any other race; but the Asiatic sons of semi-arid regions felt at home amid this bareness and used the peninsula effectively as a final stepping-stone out of Asia. Here they gathered strength for the invasion of Europe and the conquest of the Balkan Peninsula as far west as the hill-sheltered bays of Dalmatia.

THE ZENITH OF TURKISH POWER

In the thirteenth century, an eventful one for their race, the Turks, for the first time in their history, became conscious of the might of their name: the old tribal appellation had finally acquired political value; it stood for power and religious leadership. These Turks, but recently tributary to the Khalifate, became its masters.

In the fourteenth century the desert scourge spread to the Balkans. Crossing the maritime boundaries of Asia Minor, the Turks brought into southeastern Europe the fierceness and barbarity which have always characterized Asiatic warfare. Mongols were in their ranks as well as Turks and Tatars—names which in the annals of history stand for destruction. On a sudden Turkish sultans saw in themselves the successors of Caesars in the Near East. The name of Rome fascinated the minds of these medieval Turks in the same way that the name of China had exercised a spell over the imagination of their ancestors.

A short last act—for Constantinope was not captured till 1453—and one of the world's greatest migrations was over. Fully a century elapsed between the first Turkish occupation of Balkan territory and the capture of the great city. Protected by a triple line of massive walls, and partly surrounded by a natural moat

formed by the waters of the Marmara and the Golden Horn, the ancient capital strove to maintain the crumbling edifice of the Byzantine Empire to the very last. The deathblow was to be given by Sultan Mohammed II, young, ambitious, and shrewd enough to enlist on his side every recreant Christian who showed ability as a soldier or mechanic. The walls which had withstood the battering rams of ten centuries crumbled before the stone bullets of the rude Turkish cannon. On the very spot where mighty Persian cohorts bent on subduing the West had failed, the spirit of desert Turan—of the barbarous East personified by the Turk—proved stronger than the civilized West represented by the Byzantines.

TURKISH INFLUENCE ON THE RELIGION OF CENTRAL ASIA

Of the many ways in which these Turks turned out to be molders of destiny volumes might be written. One of the far-reaching though little-known results of their coming was the complete cessation of the Christianizing of Asia—a task that had been undertaken and energetically carried on by the Nestorian Church. This church was the easternmost Christian community of importance. Founded in eastern Syria in the fifth century, it spread rapidly to northern Mesopotamia and southeastern Armenia, where thousands of its followers are still to be met today. The honor of having first introduced Christianity in China belongs to Nestorian missionaries. A large part of western China became Christian through their zeal. At Hsi-an-fu a famous monument testifies to the importance of the movement. The work of converting the heathen was steadily maintained up to the twelfth century. Many Turkish and Mongol tribes, notably in the vicinity of Kashgar, had adopted Christianity. That most observant of travelers, Marco Polo, notes that he met Nestorian Christians on his way to China. Turkestan then contained Christian settlements which have not survived. The extinction of Christianity in central and eastern Asia was the work of Timur and his hordes in the fourteenth century. But for the Turk central Asia might have been Christian today.

The history of this great race of conquerors is drawing to a dishonored close before the gaze of the whole civilized world. The casual of Asiatic geography has become the outcast of Europe.

THE CONQUEST OF THE NOMAD IN CENTRAL ASIA

Everywhere the nomad is losing ground before the advance of a higher type of civilization. The Indian hunter has vanished from our prairies; the Masai warrior of the East African grassland is passing cheerfully into the white man's service; settlement is invading those most typical lands of wandering, the Asiatic steppes. We shall here trace briefly the conquest of a part of the last, Russian Central Asia.

THE CHARACTER OF CENTRAL ASIA

Russian Central Asia includes the two political divisions of the Steppe and Russian Turkestan. The dividing line between them runs approximately from the Aral Sea to Lake Balkash, but there is no sharp natural boundary. The Steppe is chiefly grassland; southward the country becomes more and more arid. Turkestan includes great desert stretches while margined on the southern edge by a belt of oases.

As Mr. Dominian has shown in the preceding article the steppe-desert character of Central Asia has made it for long ages a region of nomadism. Here, where we touch on the political aspect of the region, it is well to emphasize one of the factors which contributes most powerfully to this character—its openness. Openness by permitting freedom of movement encourages nomadism, and nomadism discourages settlement, even in such parts as may be suitable for sedentary occupation. Because of the openness of the steppe, control of it is in some respects comparable to sea power. Nomad troops operating on the grassland sea are very mobile; their chief expenditure is of time. "A medieval monk once saw with astonishment two armies leaving the central camp of the Mongol Khan, one to invade Hungary and the other Burma. But the length of their range is explained by the fact that the greater part of their journey lay over the steppe, where they would encounter neither mountain barriers nor the walls and towers of settled populations."

THE RUSSIAN ADVANCE IN THE NORTHEAST

Until the Russian conquest the steppe had never been controlled from outside by a settled people: on the contrary, waves of conquest have ever passed outwards from this great "exporter of men." The conquest of southeastern Europe by the Osmanli Turks has been told. Other parts of eastern Europe have also suffered from the migrations of allied nomads. The grandson of the great Jenghiz Khan invaded Russia in the mid-thirteenth century, and for three centuries that country remained under the yoke of the Tatars, who meantime strengthened their position by adopting the Moslem faith. The situation of Russia, the northeastern outpost of Christendom, may be compared with that of the Iberian Peninsula under the Moors. In each case the revival of the Christian power not only recovered lost ground but carried with it an impetus to the discovery of new worlds. The Portuguese, outflanking Oriental civilization by taking to the sea, inaugurated the epoch of world discovery. The traders of Muscovy pushing north and northeast reached the White Sea and the Urals. After Ivan the Terrible's triumph over the Tatar hosts Russian progress continued eastwards at an amazing rate. In 1552 the Russian frontier stood at Nizhni Novgorod; 86 years later, by the river highways of the Siberian forest, Russia had reached the Pacific. The Russian feat ranks in magnitude with the Portuguese circumnavigation of Africa.

RESULTS OF THE RUSSIAN ADVANCE IN SIBERIA

After the Russian advance the scattered native population was exterminated or reduced to nominal Christianity. Trading posts were established; gold and furs were collected for export. The history parallels that of the corresponding period in Canada, when development was practically restricted to the fur-collecting activities of the Hudson's Bay Company. In both cases conquest of the grassland from the forest was made possible by the railroad.

The Trans-Siberian Railroad was begun in 1898 and finished in 1905; its effect was to concentrate traffic and production in the south or milder parts of the country, that is towards the grassland. As in Canada, colonization was encouraged by the state. Conditions in the eastern grasslands, however, are less favorable

than in the western world. The climate is harsher for cattle, crops, and men; foreign markets are less accessible; yet there has been considerable progress. Between 1897 and 1915 the Russian population of the Government of the Steppe increased over 50 per cent; in Turkestan 30 per cent. The Siberian butter industry has made a phenomenal expansion on the successful lines of the Danish co-operative system. In 1897 butter production for the whole of western Siberia and the Steppe amounted to little over 1,000 tons (of 2,000 lbs.), in 1913 it had risen to 72,000 tons. Most of this growth, it is true, has been made in the Governments of Omsk and Tobolsk; but it is extending into the Steppe and has reached Semipalatinsk. Cereal cultivation is also progressing. In 1915 nearly 6,500,000 acres were sown to wheat in the Steppe. Furthermore it is a conquest not only of the wild steppe but of its vagrant occupants. The bulk of the non-Russian population of the Steppe is Kirghiz-Kazak, a Turco-Tatar people. Part of them have been driven south and east by the Russian colonization movement, which is taking the best lands; but some are settling down to sedentary life. The Kirghiz-Kazak may take a share in the dairying and cereal-growing future of the steppe; but there is more assurance that they will occupy themselves with the production of wool and hide for export.

Russian Progress in the Southeast

Russian conquest of Central Asia has proceeded by the southeast and well as by the northeast. Early southeasterly expansion was accomplished by the Cossack bands. The Cossacks, Slavs of varied origin, were characteristically men of the settled borderlands. They pushed forward onto the steppe to fight the nomad on his own ground, beating him with his own weapons, imitating his horsemanship, and matching his endurance. By Cossack aid the nomad was driven successively from the Crimea and the Caucasus, and conquest spread into Turkestan. Here the nomad was in his native element; on his side fought the desert with its shifting sands. To people unaccustomed to nomadic life the desert opposes one of the greatest obstacles to military conquest. Modern strategy everywhere overcomes the desert with the railroad. By its aid Kitchener conquered the Sudan. In the late war British

success in Palestine has owed much to the railroad communication established with Egypt over the wilderness that caused Napoleon to describe the desert as of all military obstacles "incontestably the greatest." So in Turkestan Russia succeeded by means of the Trans-Caspian railroad. This line, which is a continuation of the Trans-Caucasus road from Batum to Baku, was pushed forward along one of the ancient caravan routes from oasis to oasis to reach its present terminus in Ferghana province. A line from Tashkent unites the Trans-Caspian with the systems of European Russia.

Russian occupation of Turkestan was accompanied by revolutionary change in the economic life of the country. For several centuries previously nomadic control in Turkestan had destroyed communication and security; the oases had been compelled to become self-supporting and self-contained. Incorporation in the Russian Empire not only restored communications but opened up new markets. To the great Empire the most useful product of the oases was cotton; its cultivation was encouraged to such an extent that before the war Turkestan had become the fifth cotton-producing country of the world, production almost equaling that of Egypt. Expansion of cotton cultivation was made at the expense of foodstuffs; to make good the diminution grain was imported from Russia. Russian conquest was confirmed by the economic bond tied by the railroad. (Abstracted from the article "Russia, Germany, and Asia" in *The Round Table*, No. 31, June, 1918, London, pp. 526-564.)

NOTES TO ACCOMPANY THE ABOVE ARTICLES ON THE TURK AND CENTRAL ASIA

Central Asia, its present population, and the peoples claiming it as their home in the past form one of the important problems of the Peace Conference. To this reason for its study is added the fact that simplicity of relationship between the physical circumstances and human activities give excellent opportunity to the teacher of geography. Physical maps should be used as the basis of study. Of hand maps those in *Bartholomew's Advanced Atlas of Physical and Political Geography* (Oxford University Press, London, etc., 1917) are specially recommended. In less detail the maps in *Asia, A Geography Reader*, by Ellsworth Huntington (Rand McNally & Co., Chicago and New York, 1912), are useful. The relief map in the reader shows the Dzungarian Gate opening towards Lake Balkash and affording the only route westward out of Inner Asia by which no pass need be crossed. This and the other caravan routes between east and west are described in *Herbertson's Senior Geography* (The Oxford Geographies, Vol. 3, Oxford, 1907). They are clearly shown on the map of Medieval Commerce (Asia) in *Shepherd's Historical Atlas* (Henry Holt and Co., New York, 1911).

The caravan routes might well be used as a basis for approach to the study of the physical features of the great Asiatic interior. For general description *Herbertson's Descriptive Geographies from Original Sources* always contain suggestive extracts, and that on Asia should be consulted here. Matthew Arnold's well-known poem Sohrab and Rustum gives a vivid picture of the Tatar hosts arrayed for battle. The incident depicted is from the life of Persia's national hero, Rustum, immortalized by the poet Firdausi.

A most admirable account of the Asiatic lands of nomadism, their peoples, and the part played in history is to be found in the *Cambridge Mediæval History,* Vol. 1, Ch. 12, pp. 323-359, "The Asiatic Background." Causes of the nomad invasions of Europe are discussed; among them Ellsworth Huntington's theory of climatic pulsations as expressed in *The Pulse of Asia.*

A number of well illustrated articles of current interest on Central Asia are to be found in the periodical *Asia* published by the American Asiatic Association, New York, and in *Russia* published by R. Martens & Co., New York. In *Asia* for May, 1918, there is an article by E. Nelson Fell on "The Kirghiz of the Steppes." *Russia* for September, 1917, contains "Grain Culture in Siberia"; for October, 1917, "Cotton-Growing in Asiatic Russia"; for April, 1918, "Caravan Routes of Southern Siberia."

The career of the Turk in Europe may be well followed up in Mr. Dominian's *Frontiers of Language and Nationality in Europe,* published by the American Geographical Society, 1917.

THE GREAT LAKES WATERWAY AS A CIVIC AND NATIONAL ASSET

By EUGENE VAN CLEEF

No other country in the world, unless it be Canada, has experienced the tremendous advantages of a waterway such as the Great Lakes; even Canada must be content with one less of these lakes. The Great Lakes pour forth their blessings not only upon America and the cities dotting its shores, but also upon Europe. They have been a most powerful factor in assuring Europe's densely populated lands of bread at reasonable prices. At home they have influenced no less strongly the prices of most staple foods and many other commodities. The saving in our freight bills on commerce between the granary of the Northwest and the Atlantic seaboard in a given season amounts to over $200,000,000. The entire country benefits by it. But this is not all.

Suppose the 37,000,000 bushels of grain shipped from the Duluth-Superior harbor during the season of 1917 had had to go via rail to the eastern ports. Over 30,000 cars of 1,200 bushels each would have been required. Suppose the 43,000,000 tons of

iron ore had had to go via rail. 860,000 standard cars of 50 tons capacity each would have been necessary. Could the undertaking have been accomplished? Even assuming that it could, what of the increase in cost over present methods? A bushel of wheat from Duluth to New York via all rail costs about 16 cents; via lake and rail it costs but 12 cents. A ton of iron ore via rail to Lake Erie ports costs about $6.40; via water the charge is only $1.10. Coal is the principal return cargo: the whole Northwest awaits the coal brought to Duluth via the lakes (1). A ton of anthracite via all rail from Erie to Duluth would cost several dollars; via water it costs only 50 cents. Bituminous coal, if sent from Illinois, the nearest field, instead of from the East via all rail, would cost $2.00 per ton; by water via Chicago, it probably would cost not more than 50 cents, the same as from Lake Erie ports. Then, too, there is the package freight. The present shipments are relatively small, yet the total saving in freight charges is very large, in spite of the fact that the water rates have been unjustifiably high.

THE EVOLUTION OF COMMERCE ON THE LAKES

It is not possible here to detail the rise and fluctuations of commerce on the lakes, interesting as it is. But it is of importance to recall a few striking factors in the evolution of this commerce. Since La Salle in 1678 ordered the building of the *Griffon,* a boat of 45 tons, near the present site of Niagara, many of the strongest stimuli to the expansion of trade on the lakes have taken on the form of war.

The closing years of the American Revolution directed attention toward the lakes and their possibilities in furthering the success of the campaigns in the then "West." After the Revolution, the few boats that had been built for military purposes were converted at once into commercial units. The War of 1812 brought both England and America to a realization of the value of a navy on these inland seas. Hence, during the winter season of 1812-13, when navigation was closed, both countries in feverish haste constructed as many boats as possible for a "spring drive." In 1814, when the war came to an end, commercial traffic again occupied the stage, and the arrivals and departures reported for the port of Buffalo reached 64 in number.

FIG. 1—A big freighter leaving Duluth harbor. A vessel of this type ranks in size with the large ocean-freight steamers. There is also shown another modern means of transportation—the bridge ferry. The car or platform—seen at the right-hand base of the bridge—is suspended from overhead tracks and operated by electricity. Great Britain has two similar bridges, but this is the only one of its kind in the United States. The photograph was made for the *Journal of Geography* by the Commercial Club of Duluth.

STEAM ON THE LAKES

Fulton's invention of the steamboat in 1807 no doubt influenced the increase in boat building. The first steamboats to ply on the lakes were launched in 1816, Canada and the United States each launching a vessel almost simultaneously. Completion of the Erie Canal in 1825 gave further impetus to navigation on the lakes, more especially on Lake Erie. But another war was required to demonstrate some of the larger possibilities of interlake navigation. The Black Hawk War in the interior necessitated ready communication with the East. The lakes solved the problem. In July, 1832, the *Thompson* reached Chicago with troops and supplies. This was the first boat to arrive at Chicago. It also marked the beginning of regular schedules between the east and the West.

The panic of 1837 caused a temporary lull in the lake trade. Within a few years navigation managed to recover itself. It was making excellent progress when the Civil War broke out and gave it a severe jolt. The setback was only temporary, for the war had impressed the people more than ever with the value of the lakes as a commercial highway. Probably too by creating an increased demand for iron ore and stimulating the opening up of the Lake Superior ore deposits the Civil War proved a positive factor in the evolution of the lake commerce (2). Shortly after the declaration of peace the lake trade was rejuvenated and pressed with ever increasing vigor.

This had been rendered possible in large part by completion in 1855 of the Sault Canal, connecting Lake Superior and the lower lakes, whereby the Northwest was made readily accessible. Vast resources of lumber were available at that time, and in later years iron ore, copper, and wheat could be sent in seemingly unlimited quantities with maximum ease to eastern cities. The iron ore discoveries in Minnesota revived the spirit of marine invention. In 1882 the first steel freighter, the *Onoko,* built at Detroit and intended for the carrying of iron ore in large quantities, practically revolutionized commerce on the lakes. Instead of portaging a few tons of iron ore around St. Mary's Falls, a most tedious work, the new canal and the new boat made possible the carrying of thousands of tons down the lakes. Since that time boats have grown in

by electricity. Great Britain has two similar bridges, but this is the only one of its kind in the United States. The photograph was furnished by the Commercial Club of Duluth.

size and efficiency, and the commerce of the lakes has grown also, though not as much as might have been the case.

COMPETITION OF THE RAILROADS

The era of railroads challenged the lake carriers. As early as 1852, when the first railroad paralleling Lake Erie between Cleveland and Toledo was completed, trade via the lakes was menaced. Railroads meant more rapid transportation and assured an all-year route. Refrigeration was still practically unknown, and hence the railroads were given preference on perishable goods. With navigation held up four months out of each year, merchants would tend to acquire the habit of shipping by rail and so would favor that route even when the water route again became available. Yet the existence of a water route, even though available for only eight months in the year, had no small influence upon freight rates, keeping them not only at rock-bottom but below what they otherwise would have been. The railroad companies after a while secured control of many of the boat lines. They immediately began to increase the rates, always being careful not to raise them by too large additions. At the same time they maintained antiquated facilities for handling general merchandise, thereby discouraging the use of the lakes for package freight. Hence it is that today the great proportion of the commerce on the lakes is confined to five bulky products, namely, iron ore, grain, lumber, coal, and copper.

In spite of the continued opposition to the fullest use of the Great Lakes highway during the past 75 years many of the cities along this waterway have had a veritable meteoric rise. Buffalo, Cleveland, Detroit, Chicago, Milwaukee, and Duluth are striking examples of population growth. In 1840 Milwaukee ranked 79th, Chicago 54th, and Buffalo 16th; Duluth was yet unborn. Today Chicago ranks 2nd, Buffalo 10th, and Milwaukee 12th, while Duluth (3) has practically 100,000 people. How much larger and more prosperous these cities might have been had the lake route been encouraged during all these years, no one can say in specific terms. On the other hand, no one doubts that their future is full of vast possibilities if they will insist upon the maximum use of this unequaled inland waterway. Every community on the lakes has benefited by its location; but there are many that have not received

all the advantages to which their position entitles them. Because these lakes have not been utilized to their fullest possibilities, neither the Northwest nor the East has enjoyed that prosperity which is rightly theirs.

On the one hand it is noteworthy that the facilities for handling iron ore, coal, and grain are the best that man has been able to devise. As a consequence the transportation rates on these commodities are the lowest in the world. On the other hand the types of boats and terminals for handling package freight are among the most antiquated. A like instance of such inconsistency it would be difficult to find. It remains for government control as recently inaugurated to rectify this situation.

The opening of the New York State Barge Canal, the deepening of the Welland Canal, the free use of the Panama Canal, and later the completion of the proposed Georgian Bay Canal will induce an increasingly lively trade in all commodities (4). Then some day a canal between Lake Erie and Lake Michigan via northern Ohio and Indiana, the final improvement of the Chicago Drainage Canal (making it a ship canal to connect with the Mississippi), and a canal joining the head of the lakes at Duluth with the upper waters of the Mississippi in Minnesota, will give us in the northeastern quarter of the United States a system of waterways connecting the richest natural region of the earth with the seaboard and all the world that will be not merely a local thoroughfare of moderate significance, but an international highway of critical importance to all the peoples of the earth. Perhaps, as wars of the past have stimulated greater interest in these waters, so the present war may impress on us anew a full and proper appreciation of the Great Lakes.

BIBLIOGRAPHICAL REFERENCES

(1) E. L. Moran: The Coal Traffic of the Great Lakes, *Journ. of Geogr.*, Vol. 15, 1916-17, pp. 150-159.

(2) G. J. Miller: Some Geographic Influences of the Lake Superior Iron Ores, *Bull. Amer. Geogr. Soc.*, Vol. 46, 1914, pp. 881-916. This article is very well illustrated with graphic representations.

(3) Eugene Van Cleef: Duluth, a Product of the Waterways, *Journ. of Geogr.*, Vol. 15, 1916-17, pp. 189-191.

(4) Traffic Routes from the Lakes to the Seaboard, *Engineering News*, Vol. 76, 1916, Sept. 28, pp. 604-605. Summarizes a recent Canadian report on the Georgian Bay Canal question and reproduces an interesting diagrammatic representation of the eastward move-

ment of Canadian wheat in 1913. The Georgian Bay Ship Canal Commission (Dept. of Public Works, Canada, 1908) published a map (date 1907) of rail and water communications connected with the Great Lakes accompanied by tables of distances.

GEOGRAPHY AND RECONSTRUCTION IN EDUCATION

By LEONARD O. PACKARD
Boston Normal School

Never before has a knowledge of other nations been so eagerly sought as now. Never before has such knowledge been so necessary to intelligent citizenship. Newspapers and magazines are doing much to enlighten their readers concerning the history, the geography, and the disposition and policies of government of the nations of Europe; but, obviously, they cannot be expected to give thorough and systematic instruction in any subject. In an emergency like that of the present the periodicals must present much detail to make their news intelligible. When the matter is of only passing interest, doubtless the instruction thus supplied is sufficient; but when the subject brought to the attention of the public is of permanent interest, the reader must himself supply a background of fundamental principles and generalizations that the new knowledge may be ordered and retained.

NEED OF GEOGRAPHIC BASIS IN PUBLIC OPINION

In such cases it clearly becomes the duty of the schools to lay the basis for an enlightened public opinion by giving their students an understanding of the issues involved. If such fundamental knowledge is not possessed by the reader, he is at the mercy of the writer, for he is not able to judge whether the case as stated is fair or not. In so far as our readers are of this kind, newspapers of the yellow type have a clear field of operations. By arousing prejudices they help to establish a vicious public opinion —such an uncontrolled opinion as may lead the country into war or into an unsatisfactory peace, or may even destroy the very foundations of government. The attitude of certain sensational papers toward the Japanese is a case in point.

It must be admitted that, for the most part, we are slaves of the newspaper, whether its teachings be good or bad: as Mackinder has said, the slaves of the tit-bits that are in it. And it must be so until the reader has got within himself "some ordered conception of this globe into which he can fit the details as they come to him daily."

OUR MISCONCEPTIONS OF GERMANY AND FRANCE

That our increased interest in the nations of Europe is to be permanent is not to be doubted. That a knowledge of the chief elements underlying the relationships existing between ourselves and the nations of Europe should be the possession of all, particularly of students leaving our secondary schools, cannot be questioned. In the past our pupils have not acquired this knowledge. Even our leaders in education and statesmanship have failed to understand the peoples with whom we have been closely related. Historians have attempted to inform us concerning the Germany of the past, but we have been woefully ignorant of the real Germany of today. Knowing only the outward form, we have imitated her school systems, her scientific methods, and her commercial policies. We now see the folly of looking for guidance to a people whom we really do not know and understand. Have we not in this instance excellent proof of the necessity of understanding present-day conditions rather than the many details of the past which may not aid us to comprehend the present?

Nor is our failure to understand other peoples limited to the Germans alone. The French have been equally misunderstood. We have thought of the French as frivolous, superficial, decadent, lacking that vigor and efficiency which we so strongly admired in the German. Today we hold another opinion. The fortitude shown and the personal sacrifices made by her people for their country and their ideals have aroused for France the admiration of the world. These are not qualities consistent with decadence and superficiality. It may be claimed that it is only emergencies like the present which reveal peoples in their true light. Yet, even if that be true, we must still concede the necessity of making a vastly greater effort really to understand the influential peoples of the world and the relationships which exist among them.

NEED FOR A KNOWLEDGE OF INTERNATIONAL RELATIONSHIPS

That a knowledge of other countries and of our relationship to them will be indispensable to the citizen of tomorrow is apparent to anyone who realizes the active part which this country is now taking and is sure to continue to take in world affairs. Our country, which entered the war so recently, has played an important part in the negotiations for an armistice and will occupy an important place at the Peace Conference and in the reconstruction which is to follow. With the coming of peace we shall continue to be the "allies" of the peoples by whose side our soldiers in Europe have been fighting. Our social, political, and commercial relations with these people will be infinitely closer than ever before. Indeed how can a league of nations be possible unless its members are possessed of mutual and sympathetic understanding of one another? But we can hardly hope for lasting peace so long as any considerable part of the people of a country feel that their progress and welfare are independent of the progress and welfare of other nations or, worse yet, that their ambitions are to be achieved at the expense of other peoples. The new conditions which are placing such tremendous responsibilities on this country demand that our citizens be familiar with the situations in the countries of Europe as with those in the United States.

A NEW COURSE OF INSTRUCTION

That the future citizens of our country may understand the causes of this war, the important issues resulting from it, and the factors underlying international relationships in general, it is necessary to introduce into our secondary school curricula a course or courses dealing with the leading nations with which the United States has close relationships. In the past we have required no economic geography beyond the elementary school, and the required history has been limited almost wholly to ancient history and United States history. Consequently a large proportion of students leaving the secondary schools have no knowledge of modern Europe or, indeed, of conditions existing at the present time in any part of the world. It is very doubtful if school officials have been justified in overlooking this condition in the past; it is certain that no reasonable excuse can be offered for its continuance.

It must be remedied by the creation of a suitable course of instruction. The course proposed must have for its fundamental idea the elements or factors which underlie the relationships between peoples. Such a course must include some knowledge of the past in order that the present may be understood; but it is evident that the chief emphasis must be laid on the present. Not only must the dominant characteristics of the people and their government be understood, but there must also be included treatment of resources, industries, and commerce—all of which play a large part in international relationships. In short the new course should include some important facts of history and of government; but it must not ignore, as have secondary school courses of the past, the very important facts of economic geography which have quite as much to do with international relationships as have people and government. If one doubts the wisdom of such emphasis on economic geography, one has simply to recall the great problems of the war itself and also to consider the many problems involved in the reconstruction in Europe and in this country as well, to realize how largely these problems are problems of economic geography.

AN IMMEDIATE DUTY

The introduction into secondary school curricula of courses dealing with the principles underlying international relationships has already been advocated. Mr. Clarence D. Kingsley of the Massachusetts State Board of Education, in an article entitled "The Study of Nations,"(1) shows the need of approaching that study from the standpoint of present-day conditions in order that there may be understanding and harmony among the peoples of the world. The United States Bureau of Education, in a bulletin entitled "The Social Studies in Secondary Education,"(2) emphasizes strongly the desirability of breaking away from the custom of giving attention almost entirely to the past to the exclusion of an intelligent interpretation of modern international relationships and responsibilities. It is obvious that the need of such instruction is now very much greater than it was when these articles were written. At that time we had not entered the war, and the important part which we were to play in it and in the reconstruction of the world could not have been foreseen.

A course of the type here suggested would doubtless reach a larger number of pupils if introduced into the higher grades of the elementary school, or in the earlier years of the high school; but, if the training which it is possible for such a course to give is to count for real citizenship in the broadest sense, it should be taught to the most mature person which the secondary school can reach. Not only should this course be introduced, but it should be introduced at once for the reason that the pupils now in our schools will doubtless be obliged to assume even greater responsibility in the work of reconstruction than will those who follow them. Clearly the schools are not preparing the pupils for the responsibilities before them if they do not at once provide instruction along these lines.

(1) Clarence D. Kingsley: The Study of Nations, *School and Society*, Vol. 3, 1916, pp. 37-41, New York and Garrison, N. Y.

(2) The Social Studies in Secondary Education, *Bur. of Education Bull., 1916, No. 28*, Washington, D. C.

A CAMPAIGN FOR GEOGRAPHY

The occasion of the taking over of the *Journal of Geography* by the American Geographical Society seems to me most fit for the initiation of a campaign of education in respect of the promotion of geographical instruction in the United States.

Geography is notoriously the most poorly taught subject in our schools, both lower and upper. One reason for this low and backward state of the science is found in the position of its instructors—in their general lack of geographical training. But the prime difficulty does not lie with the teachers. Their position and attitude only reflect the general public apathy toward geography. How this has come about is not hard to understand. The period of thrilling world explorations, of the Stanleys and even of the Pearys, has passed. A vast mass of geographic fact has been collected. No one is competent to assimilate, within a single lifetime, all the details of this knowledge. The problem in geographical education is to select the salient matter that must be presented to give an adequate picture of the whole. Our textbooks show the incompleteness of the solution. So much that is valuable is omitted and at the same time so much that is unimportant is included as

to make the ordinary textbook a sort of uncharted sea on which the teacher, especially in the grade school, floats helplessly from continent to continent. The pupil and his parents feel that geography is simply the acquirement of a miscellany of facts about places and peoples with no significant trend in the whole study.

There lies the root of the trouble. To what end is it? Why learn all this, when one is sure that there must be much more of the same sort and that no one can hope to master the whole? The fascination of the unknown regions on which, not long ago, one could let the imagination play has been dispelled; and yet the way to apply the knowledge acquired does not seem clear.

While, however, such may seem to be the case with geography to the pupil and his parents and, indeed, to the teacher, actually the situation is quite otherwise. The war, for instance, has revealed the value of an intensive knowledge of the geography of France, Belgium, Germany, and practically all Europe. The whole world is agog with the problems of reconstruction, and these can be safely solved only on a geographic basis. The future for our country in international trade and relations looms large; to understand the possibilities before us wide geographic knowledge is essential.

What geography needs is that its study be directed, that it be taught with vision, and that interest in it be stimulated throughout the length and breadth of the land. If the last can be accomplished, if the business man, the professional man, and the mechanic can all be made to feel that broad and sure geographic training is vital to a sound education, the first two needs will be fulfilled as a consequence. The teacher who feels that pupils need geography will develop that interest and comprehension which is required for purposeful instruction. Under the stimulus of a widened and quickened public interest the textbook puzzles will be solved, the essential concepts and the kind of drill required will become more and more apparent.

Hence my plea of a campaign for geography. The current of public thought must be set moving strongly toward a general conviction of the necessity of geographic training as an equipment for life. We have all become aware, recently, how effective a systematic campaign to promote war enterprises can be made by

proper and wide use of newspaper space. Why not adopt the same measures for bringing about a public realization of the true importance of geography?

It is not my purpose, here, to argue why geography is essential. Let that be done for us by others. What I have in mind is that in each city, county, and town, the reader of these lines, wherever located, shall get the ear of the editorial department of the newspapers of the section, and ask—argue if necessary—that articles and items indicating the need for geographic instruction of a more purposeful, intensive, and comprehensive sort be printed —be indeed often made the subject of editorial comment.

There probably will be little need of urging. Leading publicists, financiers, and business men with a broad outlook are already alive to the situation. I note in *The Nation,* Oct. 19, 1918, Section II, p. 461, an article on "Foreign Investments After the War" by William S. Kies, vice-president of a large corporation. Mr. Kies argues that while some investments in foreign countries were made by citizens of the United States before the war, the securities resulting from these ventures had no general market in this country. Among other reasons he finds cause in "ignorance of commercial geography, lack of knowledge of other countries, failure to understand and appreciate the customs, the characteristics, and the ideals of other peoples; a certain narrowness of vision which confined our view to our own boundary lines; in a word, to our inability as a nation to think internationally."

That is a very concise statement of our geographical failure— "our inability as a nation to think internationally." What a theme for an editorial writer, what a chance to emphasize the necessity for vitalizing geography teaching! In future years we shall be compelled more and more to think internationally.

Our leaders in politics, commerce, and finance will, no doubt, with increasing frequency, express themselves forcefully in regard to the necessity for better and more geography. Why should not geographers and geography teachers now make it their business to seize upon such pronouncements and cause their wide quotation and review, as often as possible with editorial comment? The project is surely worth while, for all the nation, as well as all geography, would profit by its success.

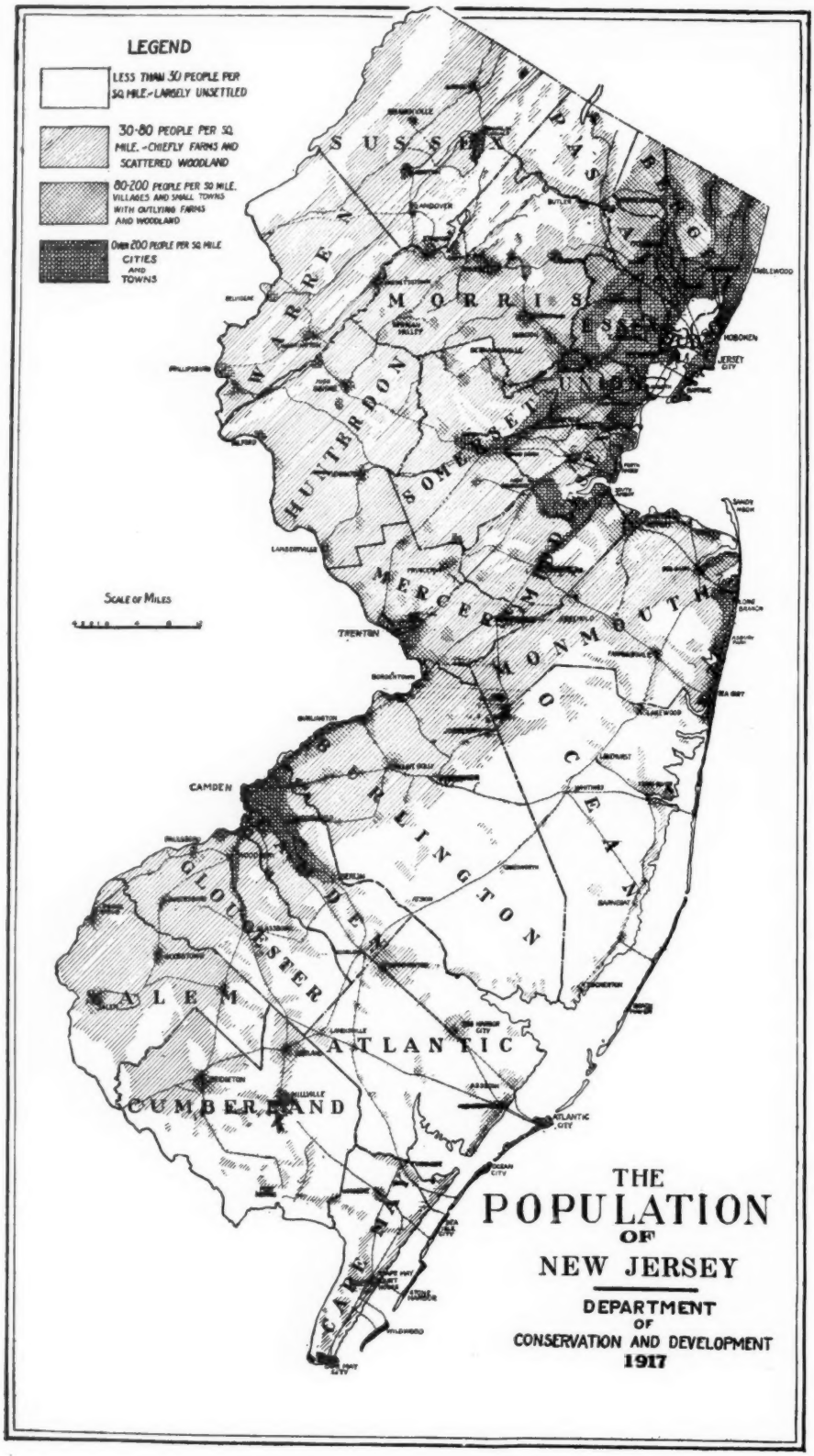
O. D. VON ENGELN

MOSQUITO CONTROL AND POPULATION DISTRIBUTION IN NEW JERSEY

The relationship between man and his environment is reciprocal: his environment influences man; man molds his environment. It is from the latter concept in particular that we arrive at the close bond between geography and civics; that we appreciate the place geography should have in the training for citizenship. Looking at geography from this viewpoint the teacher may find much valuable material in various state and federal reports. An example is taken from the Annual Report of the New Jersey Department of Conservation and Development, 1917. The accompanying map, reprinted by permission from that report, shows the distribution of population in the state.

The most striking feature of the map is the inequality of distribution. The average density of population for the state, which is exceeded only by that of Rhode Island and Massachusetts, is 337 to the square mile. Seventy-five per cent of the people live in communities of 2,500 and over, that is on 6 per cent of the area. There are two areas of dense population, one to the west and south of New York, the other east of Philadelphia. As Whitbeck has pointed out (Geographical Influences in the Development of New Jersey, *Journ. of Geogr.*, Vol. 6, 1907-08, pp. 177-182), the growth of New Jersey has been due in the first place to its situation between "two great states, two great cities, and two great harbors." Over 10,000,000 people live, work, and are fed within 60 miles of the State House (Trenton). Yet in close proximity to areas of high population we find areas of very scant settlement, and in the south and east large continuous stretches have a population greatly below the capacity of the land. The backwardness of the south and east may in part be attributed to the phenomenal growth of industrial centers made at the expense of the rest of the state; but there is another cause, the salt-water mosquito, that is "more responsible than anything else."

The extensive development of tidal marsh along the New Jersey coast is the breeding ground of the salt-water mosquito, a form which, unlike others found in the state, can travel extensively—as much as 40 miles inland. It is therefore beyond local control; remedy lies solely in draining the marshes. Already this conquest


LEGEND
LESS THAN 30 PEOPLE PER SQ. MILE.-LARGELY UNSETTLED
30-80 PEOPLE PER SQ. MILE.-CHIEFLY FARMS AND SCATTERED WOODLAND
80-200 PEOPLE PER SQ. MILE. VILLAGES AND SMALL TOWNS WITH OUTLYING FARMS AND WOODLAND
Over 200 PEOPLE PER SQ. MILE CITIES AND TOWNS
SCALE OF MILES
SUSSEX
WARREN
MORRIS
HUNTERDON
SOMERSET
UNION
MERCER
MONMOUTH
OCEAN
BURLINGTON
CAMDEN
GLOUCESTER
SALEM
ATLANTIC
CUMBERLAND
CAPE MAY
TRENTON
THE POPULATION OF NEW JERSEY
DEPARTMENT OF CONSERVATION AND DEVELOPMENT
1917

of nature has begun: some 12,000,000 feet of ditches having been constructed and 95,000 acres of marsh drained. The area of country subject to the mosquito plague has been greatly reduced, especially in the north; but 190,000 acres of marsh in the south and southeast still remain to retard progress here (the report publishes a map showing conditions in 1917 and the progress made). The soils of southern New Jersey are very favorable for truck farming; but farms are abandoned, shore resorts fail to develop, and towns are backward. The lost opportunities represent a tremendous loss to the state. By completing the work of drainage it is estimated that the gain in value of farm, shore, suburban, and industrial property would amount to not less than $500,000,000 and the prospective gain in population of 500,000.

BLACK WALNUT AND THE WAR

The black walnut tree and the Boy Scout have been linked in one of the nation's manifold efforts for winning the war. The black walnut contributes the gunstock towards the straight-shooting rifle and the propeller to the safe-flying airplane. With the exception of mahogany, no other wood is so well adapted to aircraft production; strength of fiber and freedom from splintering are properties that especially recommend it. Mahogany is an acceptable substitute, but this timber is unavailable in the United States. It could be imported from Africa or Central and South America, but shipping facilities are at present inadequate. Walnut is similarly desirable for the rifle stock. Birch can be substituted, but the walnut is preferable; for it is hard, strong, and does not warp. That is why Forester H. S. Graves designated the walnut the "Liberty Tree," and it was to help in production of the required supply that President Wilson last April affixed his signature to an emergency appeal urging 400,000 Boy Scouts to go on a searching expedition "to get every available black walnut tree to market."

In detailing the Boy Scouts as his messengers to survey the field and make a walnut census President Wilson said: "There are no longer any large individual lots of walnut timber, ... at the present time there are to be found only a few trees here and

there scattered over the whole of the United States east of the Rocky Mountains."

The bulk of black walnut is found in Ohio, Indiana, Illinois, Iowa, Missouri, Kentucky, West Virginia, and Tennessee. Smaller amounts are found in fifteen other states, while the tree has become extinct along the Gulf and the southern Atlantic seaboard. The Forest Service states that nowhere is the walnut a gregarious tree, but that it occurs in scattered groups or as isolated individuals among other species. In the mountains of the Carolinas and Tennessee the wood is found intermingled with oaks and chestnuts; while in the original hardwood forests of Ohio, Indiana, Illinois, and Kentucky it forms companionship with maple, hickories, oaks, basswood, and cherry. West of the Mississippi walnut is restricted to river valleys and is associated with the green ash, basswood, and white elm.

The present scarcity is the result of disregard of conservation in the past. Careless destruction of immature trees, a lack of appreciation of the value of the properties of the wood, and a failure to propagate the species systematically are responsible factors. Some twenty-five years ago black walnut was used indiscriminately in the manufacture of cabinet furniture, church furniture, tool handles, carriage hubs, shingles, and even as fence posts. In 1907 the market for walnut in European countries offered greater inducements than the home market, and large quantities were exported in the form of logs ten to twenty feet long and fifteen to thirty inches square. Foreign contracts for this species of timber were negotiated with England, France, and Russia upon the verge of the entry of this country into the world conflict. But since the completion of outstanding contracts a ban has been placed on the exportation of the product. The supply of Germany and the Allies is thought to be not so nearly exhausted as the stock in the United States.

The aircraft program of the United States for 1918 placed extraordinary demands on the reserve stock of walnut. From fifty to one hundred feet, board measure, are required to make one propeller. The airgoing machine has from four to five propellers, and they demand the very best grade of clear walnut board, fully one inch thick and free from defects. On an average it requires

375 feet of walnut for each airplane; the ambitious program of 10,000 airplanes a month would thus call for 3,750,000 feet. It requires three and one-half feet, board measure, for the production of a single rifle stock. By this standard the Ordnance Department has utilized over 5,495,000 feet in a year's manufacture of 1,568,661 rifles.

The Boy Scouts under the direction of the district Scout Master have had the co-operation of the county agricultural agents in locating the timber. The War Department equipped an office in the building of the Forest Service to receive reports daily, of which the number has approximated one hundred a day. The report of the Scout Master locates every black walnut tree and places it on record with details as to size and availability, together with owner's name and address and the purchase price of the timber. Some months ago the scouts had already reported over 14,000,000 board feet.

Demands are too urgent to take precaution of future needs, and consumption is excessive; but here again the Boy Scout comes to the fore. He is to see that trees are planted to take the place of those cut down, the rule being "five new trees for every one removed." Here excellent training and patriotic service go hand-in-hand.

S. R. WINTERS

NOTES FROM CURRENT PERIODICALS

USE OF GEOGRAPHICAL MATERIAL IN OTHER STUDIES

Because of the broad and practical nature of geography its subject matter and problems lend themselves admirably for use in other studies. Mathematical geography, for instance, furnishes material for intelligent problems in formal mathematics. An article "Map Scales" by R. M. Mathews in the October number of *School Science and Mathematics* offers suggestions from principles of map making "in the way of theory and problems which it is easy to introduce into the course on geometry with enlivening results."

Similarly the strong descriptive element suggests that the teacher of English may find in geography abundant subject matter for themes. In the number of *School Science and Mathematics* cited above O. W. Freeman describes "An Applied Course in High

School Physiography" in which applied geography figures largely. Many field trips are taken in the course and in connection the author says: "The field trips are made the basis of essays on the subjects studied, and if the written work is properly done theme credit in English can be secured."

On Geographical Control

In the vocabulary of the teacher of causal geography a cherished term is "geographical control." Unfortunately the very value of the term tends toward its misuse. "There is a tendency among certain teachers of geography to use language which seems to imply that geography in some way acts as a compelling force, and certain critics of geography belittle the teaching of geography because of this tendency" says J. Fairgrieve in the *Geographical Teacher* (Spring, 1918, pp. 189-192). Nature does not compel man: she offers him a choice: it is in the presentation of certain conditions from which man may choose that geography exerts control. The whole upward evolution of man has been by the wise and increasing exercise of choice. "One of our objects in teaching geography is so to present those geographical facts that people may choose sensibly with due regard to the importance of the several conditions, and may see that others have also chosen sensibly"—no little part, that is, in the training for citizenship.

THE NATIONAL COUNCIL OF GEOGRAPHY TEACHERS

Notice

The January number of the *Journal* is the first to appear under the direction of the American Geographical Society. The Society desires to co-operate in the most effective manner with the National Council in its effort to promote better geography teaching in the schools of America. Hence the relation of the Council and the *Journal of Geography* will continue the same as heretofore. Please send all renewals of subscription or membership to Dr. G. M. Wrigley of the Society. The same direction applies to those who wish to become members of the Council. Please indicate that you are now a member or wish to become one.

Geo. J. Miller
Secretary

GEOGRAPHICAL PUBLICATIONS

VALUABLE GOVERNMENT PUBLICATIONS

Several recent publications of the Smithsonian Institution deserve a place in the reference library of every geography teacher. They possess two characteristics often wanting in government publications: first, they deal with subjects of timely and general interest; and, secondly, the treatment, though scholarly, is nontechnical and well illustrated. The publications referred to are a series on "The Mineral Industries of the United States": they may be obtained free of charge from the Smithsonian Institution, Washington, D. C. The series comprises the following:

(1) **Bulletin 102, Part 1: Coal Products: An Object Lesson in Resource Administration,** by C. G. Gilbert, Nov., 1917, 16 pp. Emphasis is here laid on the inadequacy of the development of our chemical industries, particularly as applied to coal products, and remedies are suggested.

(2) **Bulletin 102, Part 2: Fertilizers: An Interpretation of the Situation in the United States,** by J. E. Pogue, Oct., 1917, 22 pp. The subject matter deals with the importance of fertilizer materials in war time, when foreign supplies are cut off or diminished and an unusual food production is demanded at home. Heretofore we have depended on Chile for nitrates, Germany for potash, and Spain for pyrite for the manufacture of sulphuric acid to render our own supply of phosphates available. The chart which accompanies the text presents the whole fertilizer situation at a glance and the effect of war conditions on the demand.

(3) **Bulletin 102, Part 3: Sulphur: An Example of Industrial Independence,** by J. E. Pogue, Nov., 1917, 10 pp. As the title indicates, our sulphur industry is independent of foreign supply. The development of two important deposits in Louisiana and Texas, near the Gulf, has made this region the leading sulphur center of the world. This development was made possible by an ingenious method of extracting the mineral: hot waters are forced underground, the sulphur melted, then pumped out and allowed to crystallize.

(4) **Bulletin 102, Part 4: Coal: The Resource and Its Full Utilization,** by C. G. Gilbert and J. E. Pogue, 1918, 26 pp. An analysis of the coal situation, sources of waste, transportation problems, and recommendations for improvements.

(5) **Bulletin 102, Part 5: Power: Its Significance and Needs,** by C. G. Gilbert and J. E. Pogue, 1918, 53 pp. An excellent treatment of our sources of power, their relation to transportation problems, the economic correlation of coal and water power, and the necessity of intelligent dealing with the question as a national rather than a local problem. Diagrams, maps, and tables serve as good summaries.

(6) **Bulletin 102, Part 6: Petroleum: A Resource Interpretation,** by C. G. Gilbert and J. E. Pogue, Aug., 1918, 76 pp. The tremendous waste, the somewhat limited sources of supply, together with the possibilities of developing the oil shale supply, are discussed.

(7) **Bulletin 102, Vol. 1: The Energy Resources of the United States: A Plan for Reconstruction,** by C. G. Gilbert and J. E. Pogue, is a summary of Parts 4, 5, 6, with an introduction and conclusion co-ordinating the whole.

W. O. BLANCHARD

SKETCHES FROM A TROPICAL WILDERNESS: BRITISH GUIANA

Jungle Peace. By William Beebe. 297 pp.; ills., index. Henry Holt & Co., New York, 1918. $1.75. 5 x 7½.

Outside of the home area much of a teacher's success in making regional geography a living subject lies in the use of wide supplementary reading. "An ordinary textbook is limited to concise and generally meager statements, and it is difficult to create a mental picture as a result of these statements; yet in the creation of such a mental picture lies the secret of real and lasting instruction," says the chapter on Geographical Novels in that invaluable work "Guide to Geographical Books and Appliances" published by the [British] Geographical Association (2nd edit., revised, George Philip and Son, London, 1910, 5s.).

Mr. Beebe's book is not a novel, but it has all the vividness that people are apt to think is only the attribute of fiction. Mr. Beebe was sent to British Guiana by the New York Zoological Society to establish there a tropical research station. The station was placed on the edge of the jungle (at the mouth of the Mazaruni River). Of the technical aspects of his work Mr. Beebe has written elsewhere (Beebe, Hartley, and Howes: Tropical Wild Life in British Guiana, New York Zoological Society, 1917); here he has given us the "atmosphere" of the jungle. The first chapters of the book also give us sketches on the way to Guiana via the West Indies, and, on the edges of the jungle pictures, we get glimpses of the human life of the colony. A vastly interesting cross section is seen, for instance, along the "Pomeroon Trail" that runs through great sugar plantations to the bush. "The first part of the Pomeroon road was one long ribbon of variegated color: hundreds of tiny huts, with picturesque groups of coolies and negroes and a smaller number of Chinese, all the huts dilapidated. . . . All were embowered in masses of color and shadowed by the graceful curves of coconut palms and bananas. . . . The yellows and reds and greens of the coolies added another color note. Everything seemed a riot of brilliant pigment. . . . Here and there tiny red flags fluttered from tall bamboo poles, reminiscent of the evil-spirit flags in India and Burma. But with the transportation across the sea of these Oriental customs certain improvements had entered in—adaptations to the gods of ill of this new world. So

the huts in course of alteration, and the new ones being erected, were guarded not only by the fluttering and the color but by a weird little figure of a dragon demon himself drawn on the cloth, a quite unoriental visualizing of the dreaded one.

"As we flew along, we gradually left the villages of huts behind. Single thatched houses were separated by expanses of rice fields, green rectangles framed in sepia mud walls, picked out here and there by intensely white and intensely Japanese egrets. . . . The rice fields gave place to pastures and these to marshes; thin lines of grass trisected the red road—the first hint of the passing of the road and the coming of the trail. . . . Forest palms appeared, then taller brush, and trees in the distance. Finally, the last three miles became a scar through the heart of the primeval jungle, open under the lofty sky of foliage, the great buttresses of the trunks exposed for the first time to the full glare of day."

AN IMPORTANT ATLAS

Geography of the World's Agriculture. By V. C. Finch and O. E. Baker. 149 pp.; maps, diagrs., indexes. U. S. Dept. of Agric., Washington, D. C., 1917.

A short notice of this atlas was given in the List of Atlases prepared by Professor J. Paul Goode for the June, 1918, number of the *Journal.* Here special attention is called to it as a work justly described as "invaluable."

The atlas includes maps, graphs, and text. The maps show by dots agricultural distribution, both plant and animal, in the world as a whole and in individual countries. Examples of the type of map may be seen illustrating the article "Agriculture in the Nile Delta," by V. C. Finch in the March, 1918, number of the *Journal.* The world maps are on the Mercator projection, hence caution must be employed in their interpretation. Because of exaggeration of area in the higher latitudes density of distribution is seemingly less. But the reader is duly warned, and the graphs serve to correct any wrong impression that may arise. The graphs show approximate figures of production and acreage: the text emphasises the geographic factors controlling the distribution. In connection with the geographic discussion should be noted the two colored maps of relief and rainfall appropriately forming the first two plates in the volume.

The atlas obviously constitutes a most accessible source of reference, but its special value to the teacher lies in the graphic quality of the maps. The mere statement that the United States produces 71 per cent of the world's corn is less impressive than the map on which the solid black representing corn cultivation in our Middle West dwarfs the spots representing corn cultivation in Mexico, Argentina, and southeastern Europe. Moreover, the maps are reminders of facts one is apt to forget or overlook. The vast production of food staples in Europe, a fact whose importance in the shortage due to war conditions has been pointed out by G. B. Roorbach (*Annals*

Amer. Acad. Polit. and Social Sci., Philadelphia, Nov., 1917; abstracted in the *Geogr. Rev.*, Vol. 5, 1918, p. 243), is well brought out in the maps of wheat, rye, potato, etc., production.

If asked to name the great sheep-rearing countries of the world, would one be likely to include the United Kingdom, an intensely industrial country of dense population and high land values? The map shows the United Kingdom and the Balkans as the major sheep-rearing countries of Europe, and the graph shows the United Kingdom to be seventh in the world list of actual head of sheep, 30,000,000. The home production of meat and wool still forms an important feature of British agriculture. Similarly the maps remind us that in total number of cattle (though not in number per square mile) India is far ahead of all other countries, having nearly twice as many as the United States, second on the list. In India cattle are not used for meat and but little for milk; they are beasts of burden and draft animals; as the detail map shows the great number is concentrated in the plains of the Ganges where cattle form an essential element in the intensive system of agriculture necessarily adopted by a very dense, non-industrial population. How dense that population is may be gauged by the map of population distribution, Figure 9.

The legends accompanying the figures are useful and suggestive. For example, in the description of the three maps showing respectively the distribution of grain sorghum and millet, wheat, rice in India, attention is called to the complementary nature of these distributions and thus to the three major climatic regions of the country—the Dekkan, with dry, warm climate over the greater part; the plains of the Punjab, still drier but with a cool winter and irrigation possibilities; the lower valley and delta of the Ganges, hot and humid. As a final illustration we quote from the legend of Figure 48, the distribution of barley in Europe and northwestern Africa: "Barley reaches its highest acreage relative to the population in two regions of entirely unlike geographical conditions—Denmark and Algeria. In Denmark cool summers make corn production impossible, and barley is grown primarily because of its early maturity and because it yields a larger weight of grain per acre than oats or rye, an important item in connection with intensive animal industries. In Algeria, where early and severely dry summers make an early-maturing grain imperative, barley is the chief food and export cereal."